

# IOWA STATE UNIVERSITY

## Digital Repository

---

Volume 1

Article 7

---

1-1-1913

## A Timber Sale Project on the Payette River, Idaho

W. A. Smith

*Iowa State College*

Follow this and additional works at: <https://lib.dr.iastate.edu/amesforester>



Part of the [Forest Sciences Commons](#)

---

### Recommended Citation

Smith, W. A. (1913) "A Timber Sale Project on the Payette River, Idaho," *Ames Forester*: Vol. 1 , Article 7.

Available at: <https://lib.dr.iastate.edu/amesforester/vol1/iss1/7>

This Article is brought to you for free and open access by the Journals at Iowa State University Digital Repository. It has been accepted for inclusion in Ames Forester by an authorized editor of Iowa State University Digital Repository. For more information, please contact [digirep@iastate.edu](mailto:digirep@iastate.edu).

# A Timber Sale Project on the Payette River, Idaho.

W. A. SMITH '12

The Payette River block embraces the National Forest lands on the watershed of the Payette River, Idaho. The bulk of the watershed is in Boise County. The Payette empties into the Snake River at the town of Payette, which has about 2,000 inhabitants. There are three main branches of the river, (1) the South Fork, (2) the Middle Fork, and (3) the North Fork. From the broad point of view of sale management, the block should be considered as the entire watershed, since resources and interests, other than those of the National Forest, influence to lesser or greater extent National Forest policies.

## OWNERSHIP OF PUBLIC LAND.

The Forest Service is the main timber owner in the block. Its nearest competitor is the Payette Lumber Company, which has large holdings on the North Fork, scattered holdings on the Middle Fork, and practically none on the South Fork. A large number of school sections are owned by the state of Idaho. There are many timber claims in the block but they are mostly located on the North Fork of the river.

The following table shows approximately the ownership of the timber land embraced in the block:

Ownership—	Acres	Estimated M. Feet
Forest Service.....	200,000	1,500,000
Payette Lumber Co.....	40,000	750,000
Public Domain.....	25,000	200,000
State of Idaho.....	10,000	100,000
Private Individuals.....	15,000	150,000
Total.....	290,000	2,700,000

The estimate given for National Forest timber is about one-half billion feet for the North Fork and the remainder on the

South and Middle Forks. The estimate of one-half billion feet is rough, being based in part upon estimates submitted by rangers and by averages obtained from areas on the North Fork which have been cruised extensively.

#### LOGGING CHANCES.

For purposes of sale management, the block is divided into three chances as follows: Chance I South Fork, Chance II Middle Fork, Chance III North Fork. Chances I and II contain most of the merchantable timber, and due to insufficient data on Chance III it is not included in the report. All of the timber in Chance I is not estimated as it is inaccessible at the present time.

#### RAILROAD COMMUNICATION.

An extension of the Idaho Northern Railway from Emmett to Payette brings the Middle Fork within 25 miles and the South Fork, at Lowman, within 50 miles of a railroad. This makes the freighting distance to Garden Valley eight miles as against the former distance of sixty miles. The road will be finished in 1913.

#### THE RIVER.

The Payette is one of the largest tributaries of the Snake River in Southern Idaho. Its watershed contains about two million acres, 75 per cent of which is mountainous with an elevation ranging from 3,000 to 8,000 feet. Snow lies from six to eight months over the greater part of the area. All three forks of the river are drivable. Small drives are made each year, but no improvements have been made on the river, and a large project would require some improvement work. Should the mill be located at Emmett, the drive from Garden Valley would be sixty-five miles, and from Lowman ninety-five miles.

#### AGRICULTURAL DEVELOPMENT.

A liberal estimate of the agricultural land on the watershed, including Emmett Valley, and the territory above, is 500,000 acres. The largest valley is Long Valley on the North Fork and contains about 250,000 acres. Garden Valley, at the junction of the South and Middle Forks, contains about 12,000 acres. Agricultural land on the South Fork consists of small, narrow benches with a total area between 2,500 and 3,000 acres.



## ROADS AND TELEPHONES.

The block is very accessible by wagon roads from Boise and Emmett. There is no road between Garden Valley and Lowman, but it is planned to construct one within a short time. From Lowman a road extends twelve miles up the South Fork.

The block is well equipped with telephone systems except on the upper South Fork, and a line will be constructed there in 1913.

## PRESENT AND PAST LUMBERING.

Lumbering on a large scale has never been carried on in the block. Considerable timber was cut from the benches along the South Fork about twenty or twenty-five years ago. In 1906 a sale of 60,000,000 feet was made to the Idaho White Pine Company, but owing to mismanagement and poor location of their mill the company went bankrupt. There are no large mills on the block but there are five small mills in Long Valley. The total drive on the river each year is from 3,000,000 to 5,000,000 feet, most of which is cut on private holdings.

Good mill sites are located at Emmett, Montour and Payette. A mill at Montour would make the shortest drive, but a mill at Emmett or Payette would reduce the freight charges.

The possibilities of securing electric power are practically unlimited. Two large power plants are now located on the river.

The length of the logging season varies from year to year, but the greater part of the logging would have to be done in the summer.

## LABOR AND SUPPLIES.

It would be necessary to import "lumber jacks" as they cannot be found in the Payette country.

Logging equipment could be shipped by rail to the mouth of North Fork and then freighted to Garden Valley. Supplies such as hay, grain, meats, vegetables, etc., can be obtained in Garden Valley, and contracts could be let for these supplies delivered at the camps.

## LUMBER MARKETS.

The block contributes directly to the large and rapidly increasing lumber market of southern Idaho and Northern Utah. This market will consume most of the lumber manufactured,

although some of the better grades would be shipped east. A mill at Montour, Emmett or Payette will have direct railroad connection with all the southern Idaho and northern Utah territory.

Lumber prices in the locality were low until the fall of 1912, when there was a decided upward trend due to the increasing demand for construction material.

#### CONTRACT PERIOD.

The contract period allowed would be twelve years for each fork with an annual cut of 25,000,000 feet B. M. for the South Fork, and 40,000,000 feet B. M. for the Middle Fork.

#### TOTAL CUT.

The total cut taken as a basis for each chance is shown in M feet in the following table:

	Yellow Pine.	Douglas Fir.	Misc.	Dead.	Total.
South Fork.....	251,351	53,777	.....	3,112	308,240
Middle Fork.....	331,922	111,300	30,263	11,530	485,015
	583,273	165,077	30,263	14,642	793,255

This includes both National Forest and private timber. The amount of timber privately owned in the sales area is so small that it would naturally be taken out with the National Forest timber.

#### HORSE LOGGING EQUIPMENT.

It would be necessary to have sufficient horse logging equipment to handle 25,000,000 feet annually on the South Park, and 40,000,000 feet annually on the Middle Fork. The total cost of this equipment is estimated at \$30,000 for the South Fork, and \$37,100 for the Middle Fork. The cost of renewing this equipment is \$42,000 for the South Fork, and \$51,900 for the Middle Fork. This makes a total during the twelve year period of \$72,000 for the South Fork, and \$81,000 for the Middle Fork. The wreckage value at the end of the period is estimated at \$15,000 for the South Fork, and \$18,000 for the Middle Fork.

#### RAILROAD EQUIPMENT.

In some of the creeks near Garden Valley, railroad logging would be cheapest and most practical. Use the narrow gauge



track with twenty pound steel. The maximum amount of track needed is seven and one-half miles.

Cost f. o. b. mouth North Fork:

2 locomotives.....	\$10,000.00
30 logging cars.....	15,000.00
1 log loader.....	650.00
Railroad and machine shop tools.....	2,000.00
225 tons steel.....	7,200.00
Railroad spikes.....	265.00
Angle bars.....	535.00
Turn table.....	50.00

Total.....\$35,700.00

DRIVING AND STREAM IMPROVEMENTS.

The whole operation in the case of each fork is based on annual log drives, made in the spring of each year, which will deliver the annual cut to the mills. The initial cost of driving equipment for each fork is estimated at \$1,940 and must be renewed approximately three and one-half times during the twelve year contract. No wreckage value is given to the driving equipment. The improvements consist of blasting rocks in the bed of the river, building piers and wing dams, the total cost of which is placed at \$2,500 with interest for twelve years equal to \$3,475. This makes a charge of \$.004 per M. for such improvements.

CAMP ADMINISTRATION.

Camp administration is estimated at \$6,000 annually or a total of \$79,200. No interest is figured on the basis that the commissary profit will offset the item.

MILLING OPERATION.

The sawmill should have a capacity of 150,000 feet per day and cost \$150,000 when fully constructed. It is estimated that the cost of the mill site, construction of storage pond, booms, yard, etc., will amount to \$15,000.

The Scribner Decimal C. Scale will be used in measuring up all the timber. The timber from the Payette region has been overrunning this scale from 12 per cent to 15 per cent, but it is estimated there will be 2 per cent to 5 per cent loss in driving, breakage, shrinkage, etc.

The average normal prices on the Boise market preceding fall of 1912 were as follows:

Yellow Pine, f. o. b. Boise.....\$19.35 per M.

Douglas Fir, f. o. b. Boise..... 16.35 per M.

At the present time prices are rising rapidly.

## OBJECTS OF MANAGEMENT.

The objects of management are two-fold: (1) The production of commercial timber mainly for a non-local market; (2) The maintenance of a forest cover on the upper watershed of the Payette River and its tributaries. For the two species, yellow pine and Douglas fir, forest management will work principally towards the production of saw timber. Local demand will not be great enough to influence management. Practically the only danger to watershed is on exposed south slopes where yellow pine is scattered. On such sites marking should be light.

## SILVICULTURAL SYSTEMS.

A modification of the "Selection system," i. e., the "diameter limit," should be used in most of the merchantable stands. Rather as a guide than a rigid rule, the diameter limit for yellow pine should be 18" and for Douglas fir 16" D. B. H. Although detailed growth studies were not made, it is thought by making cuts to respective limits indicated, that the average stand will be ready for another cut in fifty years. The diameter limit should be small enough to include trees in which the mean annual growth has culminated. The stand tables indicate the presence in most places of a fair stand of reproduction.

Undesirable features of the system will be lessened if the minimum diameter limit is not too rigid and the marking is intelligently done. Some of the circumstances under which trees should be left above the specified diameter limit are: (1) Where tree is increasing in volume rapidly; (2) Where the tree is needed for seed; (3) Where removal would result in erosion of soil; (4) Where cutting would subject young growth to wind.

Trees below diameter limit should be removed, if merchantable, for the following reasons: (1) If increasing in volume slowly; (2) Where a bunch of reproduction will be favored; (3) When the tree is defective.

## BRUSH DISPOSAL.

*In open stands of yellow pine, found on steep slopes with little ground cover, and where little reproduction is present, the brush should be scattered. The layer of brush should be thick enough to effectually aid in checking erosion. In denser stands where*



fire hazard is great the brush should be piled in small piles, as free as possible from reproduction, and should be disposed of when there is least danger from spreading the fire. The burning may be done safely after a light fall of snow, or in the spring after most of the snow has melted.

#### PROTECTION.

There has not been much fire damage on the tract but danger will become greater as the country is opened up. A beginning of a system of fire lines might be made while the area is being logged. The greatest help would be the building of trails.

There are several hot springs on the block which will eventually be made into summer resorts. Around these springs the timber should be protected.

The only protection from grazing that is needed is the prevention of close herding.

There is considerable damage to Douglas fir from *Arcen-thobium douglasii*. It causes Witches' broom which sometimes covers the whole tree. All of the infected trees should be cut since the destruction of the host plant also destroys the parasite.

#### ARTIFICIAL FORESTATION.

As a whole the reproduction over the area is excellent. The only areas which need to be considered for artificial seeding or planting are the exposed grassy slopes and ridges and several large burns on the Middle Fork. Many of the unburned brush covered areas have good stands of seedlings in sight which will eventually restock the land if given protection from fire.

#### TIMBER LAND OF AGRICULTURAL VALUE.

Practically the only timbered land of agricultural value in Chance I and II are small, narrow benches lying along the main river. The greater part of such benches occur along the South Fork above Lowman. Numerous claims have already been taken up. The timber on these lands should be cut before the land is listed. There is no agricultural land on the Middle Fork.

#### CHANCE I.

##### SOUTH FORK, PAYETTE RIVER.

Three principal types are found on the South Fork areas, viz.,



Yellow pine type, mixed type of Yellow pine and Douglas fir, and the Douglas fir type. Two important types from the silvicultural standpoint are the Lodgepole and Aspen, and two of only passing importance are, the Balsam fir and Engelmann spruce types.

## SUMMARY ESTIMATE IN M. FEET.

Ownership.	Yellow Pine. Stand. Cut.	Douglas Fir. Stand. Cut.	Merch. All Cut.	Dead. Stand.	Total. Cut.
National					
Forest ..	286,034	245,157	65,373	52,543	3,072
State ....	4,035	4,035	720	720	30
Private ...	2,180	2,180	468	468	35
	292,249	251,372	66,561	53,731	3,137
					361,972
					308,240

## PERMANENT IMPROVEMENTS.

Estimated permanent improvements in connection with South Fork operations:

## INITIAL OR FIRST YEAR.

Sawmill at Emmett or Montour.....	\$ 82,500
Railroad equipment (value).....	11,900
Horse logging equipment.....	30,000
Driving equipment .....	1,940
Improving main river below forks.....	2,500
Improving South Fork, Lowman to Forks.....	2,500
Total .....	\$130,340

## SUBSEQUENT INVESTMENTS.

Renewal horse logging equipment.....	\$42,000
Renewals driving equipment.....	6,800
Improving South Fork above Lowman.....	5,000
Total .....	\$53,800

The stumpage rates are \$2.50 per M. for Yellow pine, and \$1.50 per M. for Douglas fir which leaves an average profit to the operator of \$3.37 per thousand feet of lumber cut.

## AVERAGE LOGGING COSTS.

Total cut, 308,240 M. feet B. M.

Total cost at Garden Valley—\$1,752,220.60.

Average cost of logs per M. feet in Garden Valley is \$5.68.

	Logs Per M. Feet, B. M.	
	Yellow Pine.	Douglas Fir.
Cost of logs in Garden Valley.....	\$5.68	\$5.68
Camp administration .....	.25	.25
Depreciation of logging equipment.....	.18	.18
Interest and maintenance on same.....	.05	.05
Depreciation in interest on driving equipment	.04	.04

# A TIMBER SALE PROJECT ON THE PAYETTE RIVER 63

Stream improvement, South Fork.....	.03	.03
Stream improvement, Main river.....	.004	.004
Driving, Garden Valley to mill.....	.75	.75
Sorting and booming.....	.10	.10
Interest on working capital.....	.26	.26

Average cost of logs at mill..... \$7.344 \$7.344

## AVERAGE MILLING COSTS.

AVERAGE MILLING COSTS PER M. FEET B. M.

	Yellow Pine.	Douglas Fir.
Pile bottoms and alley ways.....	\$ .04	\$ .02
Handling in pond.....	.11	.11
Sawing in rough.....	1.25	1.00
Power and light.....	.15	.15
Grading .....	.40	.25
Tallying .....	.05	.03
Yard transportation .....	.40	.25
Piling .....	.50	.25
Surfacing .....	.65	.25
Loading on cars.....	.30	.30
Taxes and lumber insurance.....	.25	.25
Selling and commission.....	.50	.40
Supervision .....	.30	.30
Fire protection (yards).....	.10	.10
Depreciation, maintenance, etc.....	.406	.406
Interest on working capital.....	.15	.10

Average cost of milling.....\$5.556 \$4.156

## CHANCE II.

### MIDDLE FORK, PAYETTE RIVER.

There are three important timber types on the Middle Fork: (1) Yellow pine type; (2) Mixed type, in which yellow pine and Douglas fir predominate; and (3) the Douglas fir type. The small areas of lodgepole pine, spruce, and of the sub-alpine type are not important.

### TIMBER ESTIMATE IN M. FEET.

Ownership.	Yellow Pine		Douglas Fir		Miscellaneous	
	Stand	Cut	Stand	Cut	Stand	Cut
National Forest.....	380,559	307,282	127,750	102,455	35,417	27,963
State .....	16,330	16,330	5,795	5,795	1,600	1,600
Private .....	8,310	8,310	3,050	3,050	700	700
Total .....	405,199	331,922	136,595	111,300	37,717	30,263
Dead						
All Cut						
National Forest.....			10,895		554,657	448,595
State .....			280		24,005	24,005
Private .....			355		12,415	12,415
Total .....			11,530		591,077	485,015

The total cut will be about 80 per cent of the entire stand, all



of which is over 12" D. B. H.; 71 per cent of the cut will be Yellow pine and 29 per cent will be Douglas fir.

#### PERMANENT INVESTMENTS.

##### INITIAL OR FIRST YEAR.

Sawmill at Emmett or Montour.....	\$ 82,500
Horse logging equipment.....	37,100
Railroad equipment .....	35,700
Driving equipment .....	1,940
Improving main river below the forks.....	2,500
<b>Total .....</b>	<b>\$159,740</b>

##### SUBSEQUENT INVESTMENTS.

1½ miles tote road and bridge over creek.....	\$ 750
Bridge over Payette River.....	750
Repairing 7½ miles old tote road.....	1,500
Improving main river from Silver Creek to Garden Valley.....	12,000
<b>Total .....</b>	<b>\$15,000</b>
Renewal horse logging equipment.....	\$51,900
Improving Silver Creek.....	20,500
Improving upper Middle Fork.....	18,500
Renewals driving equipment.....	6,800

**Total .....** \$97,700

**Grand total, subsequent investments.....** \$112,700

The stumpage rates will be \$2.50 per M. feet for Yellow pine, and \$1.25 per M. feet for Douglas fir, or a flat rate of \$2.00 per M. feet for all species.

#### AVERAGE LOGGING COSTS PER M. FEET B. M.

	Yellow Pine.	Douglas Fir.
Cost of logs in Garden Valley.....	\$6.18	\$6.18
Camp administration .....	.17	.17
Depreciation of logging equipment.....	.15	.15
Interest and maintenance on same.....	.05	.05
Depreciation and interest on driving equipment .....	.02	.02
Stream improvement, main river.....	.004	.004
Driving, Garden Valley to mill.....	.75	.75
Sorting and booming.....	.10	.10
Interest on working capital.....	.306	.306
<b>Average cost of logs at mill.....</b>	<b>\$7.73</b>	<b>\$7.73</b>

#### AVERAGE MILLING COSTS.

##### AVERAGE MILLING COSTS PER M. FEET, B. M.

	Yellow Pine.	Douglas Fir.
Pile bottoms and alley ways.....	\$ .04	\$ .02
Handling in pond.....	.11	.10
Sawing rough .....	1.25	1.00
Power and light.....	.15	.15
Grading .....	.40	.25
Tallying .....	.05	.03
Yard transportation .....	.40	.25
Piling .....	.50	.25
Surfacing .....	.65	.25

Loading on cars.....	.30	.30
Taxes and lumber insurance.....	.25	.25
Selling and commissions.....	.50	.40
Supervision .....	.30	.30
Fire protection (yards).....	.10	.10
Depreciation, maintenance, etc.....	.25	.25
Interest on working capital.....	.15	.10
Average cost of milling.....	\$5.40	\$4.00

## TERMS OF SALE AND CONTRACT.

The timber is to be advertised from February 15, 1913, until June 1, 1913.

Estimated amount for which Forest Service will contract:

In M. Feet.	Yellow Pine.	Douglas Fir.	Misc.	Merch. Dead.	Total.
South Fork.....	245,157	52,543	.....	3,072	300,772
Middle Fork.....	307,282	102,445	27,963	10,895	448,585
Total.....	552,439	154,988	27,963	13,967	749,357

In addition to the above there are 8,000,000 feet of state and private timber on the South Fork, and 36,000,000 feet on the Middle Fork. This makes a total of 308,000,000 feet for the South Fork, and 484,000,000 feet for the Middle Fork.

A period of twelve years will be allowed to cut the timber on the South Fork, and fifteen years will be allowed on the Middle Fork. A bond of \$20,000 will be required of the purchaser. All timber must be paid for before it is cut, and these payments shall be made in sums of \$10,000 each.

## BRIEF SUMMARY OF TERMS OF CONTRACT.

1. Timber on valid claims are exempt from the terms of this contract.
2. Reproduction is to be protected.
3. All company books are to be open to Forest officers.
4. Ground in vicinity of camps, mills, etc., shall be kept in a sanitary condition.
5. So far as possible all branches of the operation shall keep pace with one another.
6. All telephone lines shall be protected.
7. All tops shall be lopped and the brush disposed of as directed by the Forest officer in charge.
8. Sample markings on the area are to be examined before the contract is signed.
9. All marked trees are to be cut.
10. Horse logging is to be used as far as possible. Other



methods to be used only when permission is granted by the Forest officer in charge.

11. Logs below the minimum size are to be scaled as the Forester directs.

12. Cutting shall be done with a saw when possible.

13. No timber shall be cut unless it is marked.

14. Yellow pine ten feet long that scales 33 1-3 per cent sound and other species scaling 50 per cent sound are to be considered merchantable.

15. The plans of logging are to be approved by the Forest officer in charge.

16. Spark arresters are to be used on all engines, and each engine must be equipped with fire fighting apparatus.

17. Timber shall be scaled by the Scribner Decimal C rule.

18. The right to turpentine any of the trees is reserved by the United States.

19. Timber left in the field, and unmarked timber which is cut shall be paid for at twice the stumpage rate.

20. All timber used in improving streams, except flumes, and in constructing roads and bridges will be furnished free of charge.

21. The purchasing company is to do all in its power to suppress fires and insects.

22. The stumpage rates shall be readjusted every five years.